

# Streamlines



Newsletter of the New Hampshire Volunteer River Assessment Program

July 2008

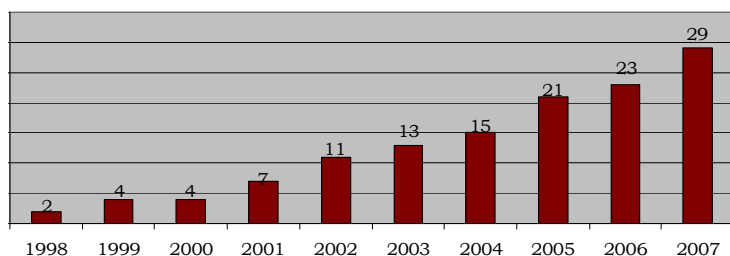
New Hampshire Department of Environmental Services Watershed Management Bureau

## 2007 Monitoring Highlights

Welcome to the third edition of *Streamlines*, the annual newsletter of the New Hampshire Volunteer River Assessment Program.

In 2007, VRAP supported 29 volunteer groups and 194 volunteers on numerous rivers and streams throughout the state. These volunteers contributed approximately 1,696 hours of time collecting water quality data!

Number of VRAP Groups 1998-2007



The number of water quality samples measured has grown significantly from 385 samples in 1998 to **9,754 in 2007**. These figures only include parameters such as turbidity, pH, water temperature, dissolved oxygen (mg/L and percent saturation), specific conductance, and air temperature, and do not include samples analyzed in the laboratory such as nutrients (phosphorus, nitrogen), *E.coli*/bacteria, chloride, metals, etc., which would increase the total number of VRAP samples measured in 2007 to **11,630**.

In addition to instantaneous measurements, NHDES and VRAP volunteers utilized multiparameter dataloggers and water temperature dataloggers to collect more detailed information on dissolved oxygen, pH, specific conductance and/or water

temperatures. These dataloggers generated an additional **195,849** datapoints making the total number of samples measured in 2007 to **207,459**. The number of stations monitored has also grown from 16 in 1998 to 358 in 2007.

In 2007 the VRAP program collected more data and monitored more stations than in any previous year. The program continues to develop and expand, while maintaining the quality assurance/quality control processes that form the core of the program. VRAP volunteers are invaluable in protecting and preserving New Hampshire's rivers and streams, and for being local stewards who help educate the community regarding the importance of good water quality. We are looking forward to both continued programmatic growth and development and working with you in 2008!



Dalton Conservation Commission

# NHDES to Participate in Survey of Nation's Rivers and Streams

David Neils, Biomonitoring Program Coordinator

The New Hampshire Department of Environmental Services will begin work this summer on an EPA-sponsored project to characterize the condition of the nation's flowing waters. The survey will use a random sampling design to complete a statistically valid assessment of all flowing waters. As part of its commitment to this project, 16 rivers and streams across New Hampshire will be sampled in 2008 and 2009. These data will be combined with data from over 1,800 other stations nationwide to provide the most comprehensive and coordinated snap-shot evaluation to date of U.S. rivers and streams using a consistent sampling protocol.

Components of the project include water chemistry, physical habitat, structure and composition of biological communities, fish tissue, and bacteriological samples. Of the 16

stations in New Hampshire, six are tentatively scheduled to occur on the Connecticut River, two on the Merrimack River, and two on the Androscoggin River. The remaining six stations are on the Cocheco River (Rochester), Nubanusit Brook (Peterborough), Peavy Brook (Ossipee), Nineteenmile Brook (Tuftonboro), Indian River (Canaan), and an unnamed brook in Amherst.

Once field work for the national stations is completed, NHDES staff will sample 34 additional stations in order to complete a statewide assessment of New Hampshire's rivers and streams. A report on these results is expected to be available in 2012.

For more information on this project, contact David Neils, Aquatic Biologist at (603) 271-8865 or [David.Neils@des.nh.gov](mailto:David.Neils@des.nh.gov).

## Introducing Danielle Adams 2008 VRAP Assistant



Danielle graduated in 2004 from the University of New Hampshire where she earned a B.S. in Environmental Conservation. While at UNH, she worked on the N.H. Stream Assessment Project, studied abroad in New Zealand, and participated in community service trips to Oklahoma and

Honduras. From 2004 to 2006 she volunteered as an AmeriCorps OSM/VISTA Watershed Coordinator with the Friends of the Cheat in West Virginia. In 2008, Danielle received her master's degree in Environmental Science and Policy from Clark University, in Worcester, Mass. During her time at Clark, she worked with a community-university partnership to help local residents test their homes for indoor pollution and to build the neighborhood's capacity to address indoor pollution concerns. Danielle is excited to be back in New Hampshire, and looks forward to working with VRAP volunteers this summer! Please feel free to contact her at [danielle.adams@des.nh.gov](mailto:danielle.adams@des.nh.gov)

*Streamlines* is published by



Thomas S. Burack  
Commissioner

Michael Walls  
Assistant Commissioner

Harry T. Stewart  
Water Division Director

Paul Currier  
Bureau Administrator  
Watershed Management

Ted Walsh  
VRAP Program Manager

Jen Drociak  
Editor and  
VRAP Coordinator

Watershed Management Bureau  
New Hampshire Volunteer River  
Assessment Program

29 Hazen Drive - PO Box 95  
Concord, NH 03302-0095  
(603) 271-0699  
[www.des.nh.gov/wmb/vrap](http://www.des.nh.gov/wmb/vrap)

# Didymo found in Vermont and New Hampshire

Reprinted fact sheet of the NH Department of Environmental Services Watershed Management Bureau



Photo by Amy Smagula

## What is Didymo?

Didymo (or Rock Snot) is the common name for *Didymosphenia geminata*, an invasive freshwater diatom (microscopic alga). Didymo can form extensive “blooms” on the bottoms of rocky river beds, essentially smothering aquatic life forms such as macroinvertebrates (aquatic insects), native algae, and other organisms. Didymo uses stalks to attach to rocks and plants in a river system. The diatom actually creates these stalks, which can form masses 3 inches to 5 inches thick on the river bottom, and trail for lengths of 2 feet to 3 feet in the current. It is actually the stalks that are more problematic than the alga. The alga will eventually die off and decompose, while these stalks tend to persist for several months on the river bottom.

## Where did it come from?

Didymo is generally a northern circumpolar species, found in colder, low nutrient, high clarity streams. We are noticing, however, a shift in the habitats where Didymo can survive now, which includes streams in warmer climates, streams with more nutrients, and streams with moderate clarities and even some tannic (tea colored) waters. Didymo is currently found in Scotland and Poland, and it is spreading throughout the Northwest U.S. It is also in Quebec and British Columbia. New Zealand has been particularly hard hit by the Didymo problem. It is believed that Didymo was introduced to this region by contaminated fishing/wading gear.

## Why is Didymo a problem?

Didymo will change the bottom appearance, structure, and food web of a stream. Ecologically, common macroinvertebrates found on the bottoms of well-oxygenated streams will change to more worm-like and snail populated communities. Aesthetically, the brownish-white flowing masses of stalk structures are unpleasant to see and recreate in.

## What is the current distribution in the Northeast?

As of fall 2007, Didymo extended from just north of Lake Francis in Pittsburg, down through Northumberland, N.H. In other states, portions of the White River in Vermont downstream of the Stony Brook confluence are infested, and the Batten Kill River between Vermont and New York has some populations of Didymo. Most recently, the East and West Branches of the Delaware River in New York and Pennsylvania support populations of this alga.

## What does it look like?

Didymo is often described as looking similar to a sewage spill with wet toilet paper streaming in the waterbody. This is the result of the stalk material becoming long and shredding at the ends, and bleaching white. These mats have a slimy appearance, but are not slimy at all to the touch. Over time, the bloom may take on a brownish/flocky appearance as sediment particles become embedded within the stalks.

## What does it feel like?

Didymo feels like wet felt, wool, or cotton balls. It is hard to pull apart, and hard to remove from the substrate it has attached to. In contrast, most other algae species feel slimy and will slip through your fingers.



## Does it smell or have an odor?

There is no distinctive odor or smell associated with the alga or the stalk material.

## In what types of habitats/conditions is Didymo generally found?

Didymo is found in river systems with stable substrates such as cobble or rock bottoms. Water conditions are usually clear, cool (optimal temperature is about 60°F), have high light penetration, and lower nutrient concentrations. Flow conditions are generally moderate to moderately fast.

## How does Didymo spread?

This alga is so small it can go unobserved when it is a single algal cell on the bottom or in the water column. Additionally, the alga can remain viable for several weeks if kept moist. Because of this, spread of the alga is unfortunately easy. Felt soled waders are often particularly to blame, since fishermen use them to gain a grip on slippery, rocky bottomed areas. The alga easily becomes attached to the felt, and if not properly cleaned or thoroughly dried before use, the diatom can spread to another waterbody. Any other recreational equipment, including bait buckets, neoprene diving gear, water shoes/sandals, canoes, kayaks, and life jackets, can also transport Didymo.

## Will we ever get rid of it?

There is no means of eradication for this alga. Many researchers across the globe are currently working on control and eradication methods, however.

## Can Didymo grow in lakes?

Yes, since Didymo is an alga, it can certainly grow in lakes, ponds, or other freshwater systems. Didymo generally will not reach bloom conditions in these types of systems, however. Didymo will mostly be a problem in river systems. In fall 2007, biologists from the N.H. Fish and Game Department noted the presence of Didymo attached to some of the nets deployed for a period of time for fisheries sampling in Lake Francis.

## What do I do if I think I saw Didymo?

First, consult the link on the Didymo page at [www.des.nh.gov/wmb/exoticspecies](http://www.des.nh.gov/wmb/exoticspecies) called "How to Tell if You May Be Seeing Didymo" to determine if the specimen is worth collecting. If yes, then collect a representative sample of what you are seeing, and send it to the N.H. Department of Environmental Services or the Vermont Department of Environmental Conservation. Addresses are listed on the identification page. Please send samples to the agency in the state where the sample was collected. Include a location description, estimate of the area that is impacted, and date/time the sample was collected. GPS coordinate are also very helpful, if you have a GPS unit handy. Samples can be folded into a business card, or placed into a jar or plastic bag.

## What is the response strategy that is being taken to combat this problem species?

The biologists from both the Vermont and the New Hampshire environmental agencies have met and will be coordinating on strategies to track and monitor Didymo spread. Signage is available from either state agency, or by download from [www.des.nh.gov/wmb/exoticspecies](http://www.des.nh.gov/wmb/exoticspecies) on the Didymo page. Laboratory personnel in each state are prepared to examine specimens that are sent in for identification. We are all now just learning how to respond and contain (if possible) this new threat to our waterbodies. More information will be posted on the New Hampshire/Vermont Didymo websites at it becomes available.

## What should You Do?

■ **CHECK** – Remove all visible clumps of algae and plant material from fishing gear, waders, clothing, water shoes and sandals, canoes and kayaks, *and anything else* that has been in the water.

■ **CLEAN** – Soak and scrub all items for at least 10 minutes in *very hot water* with lots of soap. Felt-soled waders need 30 minutes!

**For More Information:** (603) 271-2248 or visit [www.des.nh.gov/wmb/exoticspecies/](http://www.des.nh.gov/wmb/exoticspecies/).

# Biomonitoring Program Develops Coldwater Fish Community Assessment Tools

*David Neils, Biomonitoring Program Manager*

Coldwater fish species are a valuable native natural resource of many New Hampshire aquatic communities. Generally defined as species that require water temperatures below 70° and inhabiting well oxygenated waters, their occurrence are important indicators of aquatic community condition. As relatively sensitive species, they are expected to occur in minimally impacted waters. However, just like the observed variation in natural vegetative communities across the New Hampshire landscape, the natural occurrence coldwater fish species is restricted to waters where conditions are favorable for their survival, growth, and reproduction.

As a first step in describing the current expected natural occurrence of coldwater fish species in New Hampshire's flowing waters, the NHDES Biomonitoring Program utilized data from 163 minimally-disturbed stream segments from which fish data was collected from 1997-2006. The analysis utilized brook trout and slimy sculpin as indicator species and resulted in a model that was nearly 90 percent accurate in predicting their occurrence in first through fourth order streams. Latitude, longitude, and drainage area were the most important factors in explaining the distribution of the indicator species. The analysis demonstrated an increasing probability of occurrence for the indicator species as one moves from south to north, east to west, and from large to small streams.

Once coldwater streams were identified, a sub-set of the original stations was used to develop an index capable of characterizing fish community health at individual sites. The development process included the selection reference (un-impacted) and test (impacted) stations, identification of the best indicators of community condition (metrics), and establishment of an index threshold. The index threshold is analogous to a water quality criterion, such as bacteria, where numeric values above the threshold are



*Photo courtesy of David Neils*

considered safe, whereas values below the threshold are indicative of unsafe conditions. The development process resulted in an index with potential numeric scores ranging from 9 (poor condition) to 45 (excellent condition) with a threshold of 30. A total of 6 metrics were identified as the most responsive to anthropogenic impacts and measured ecological attributes such as species diversity, reproductive success, dominance of pollution tolerant species, fish feeding strategies, and habitat preference.

The development of these tools greatly enhances NHDES's ability to complete formal water quality assessments as required by EPA, report on the condition of riverine aquatic communities, implement water quality standards, and make more informed permitting decisions. In the future, the Biomonitoring Program will be developing additional fish indices specifically designed to evaluate the condition of cool- and warm-water fish communities.

For a statewide map showing the expected natural distribution of coldwater fish communities or details about the coldwater fish community condition index contact David Neils at (603) 271-8865 or [david.neils@des.nh.gov](mailto:david.neils@des.nh.gov).

# The Comprehensive Shoreland Protection Act (CSPA) – A Snapshot of What You Need to Know

Arlene Allen, Shoreland Protection Outreach Coordinator

**Effective April 1, 2008**, the CSPA applies to all fourth order streams, including the Saco and the Pemigewasset Rivers and the primary building setback for structures within the Protected Shoreland is 50 feet from the reference line (high water mark). The 50 foot primary building setback applies in ***all*** municipalities whether or not the municipality has its own lesser setback. Municipalities may continue to maintain or enact greater primary building setbacks, however, they may not issue variances for primary building construction within 50 feet of the reference line. When municipalities have a primary building setback greater than 50 feet, the municipality is responsible for the enforcement of the greater setback. **Other changes to the CSPA were effective July 1, 2008** and include, but are not limited to:

- A shoreland permit requirement for many construction, excavation and filling activities within the Protected Shoreland.
- An impervious surface allowance of 20% for the area within the Protected Shoreland that may be increased up to 30% with additional storm water protections.
- The area within 50 feet of the reference line will be identified as a Waterfront Buffer. Trees and saplings within the Waterfront Buffer are managed with a grid and points system. Fifty points of trees and saplings must be maintained in each grid. Ground cover may be pruned down to 3 feet but can not be removed except for a 6 foot wide access path to the water.
- A percentage of the native vegetation between 50 feet and 150 feet must remain unaltered.
- The CSPA will apply to all Designated River Segments.



*Protected setbacks and areas of restricted use*

Examples of projects that require a permit, include, but are not limited to: construction of houses, accessory structures, septic systems, patios or driveways; excavation for foundations, driveways, regrading of any kind; filling for driveways or backfilling retaining walls. Application forms are available at [www.des.nh.gov/cspa](http://www.des.nh.gov/cspa).

Examples of **projects that do not need a permit** include, but are not limited to: using hand-held tools to work in a garden; removing dead, diseased or unsafe trees; trimming, pruning or thinning of branches; repairs to existing legal structures that do not increase the footprint, result in excavation or removal of native vegetation or increase septic loading. A complete list of activities that do not require a permit can be found in the Shoreland Administrative Rules, Env-Wq 1406.03 and 1406.04.

For more information contact Arlene Allen at (603) 271-0862 or [arlene.allen@des.nh.gov](mailto:arlene.allen@des.nh.gov).



# The Rivers Management and Protection Program Turns Twenty!

Steve Couture, Rivers Coordinator

2008 marks the 20th anniversary of the New Hampshire Rivers Management and Protection Program (RMPP). This landmark legislation (RSA 483) created a program to increase partnerships between the state and local communities around river protection. The purpose of the program is to protect New Hampshire's significant river resources for the benefit of present and future generations. Under the program, local communities can seek to designate rivers with outstanding characteristics and values. Once designated, a river benefits from increased protection, technical assistance and financial assistance at the state level. At the local level, designated rivers develop river corridor or watershed management plans and provide advisory input for municipal and state activities.

Over the past 20 years, 15 rivers have been designated throughout the state. These rivers are found racing through mountain valleys, meandering through our towns and cities and all contain outstanding characteristics and values. From our first five rivers designated in June 1990 (Lamprey, Upper Merrimack, Lower

Merrimack, Saco and Swift Rivers) to the Ammonoosuc River designated in August 2007, the RMPP has continued to promote protection and stewardship of our river resources through education and outreach, and financial and technical assistance.

The creation of the RMPP in 1988 was the result of years of dedication by numerous



## ***RMPP 20<sup>th</sup> Anniversary Poster on Sale Now!***

*This beautiful, full-color poster commemorates all of the past and ongoing efforts on behalf of New Hampshire's designated rivers. The 24" x 16" poster is printed on recycled paper and is only \$5 – making a great gift! To order, contact Josh Cline, New Hampshire Rivers Council at (603) 228-6472 or [josh@nhrrivers.org](mailto:josh@nhrrivers.org)*

individuals and organizations that recognized the urgent need to protect New Hampshire's rivers. One of the early advocates in New Hampshire was former state Senator Fredrick Porter, who in 1971 amended House Joint Resolution 46 to include the following statement: "Whereas, certain rivers in New Hampshire possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values be it resolved that [the] State of New Hampshire declares that it is the policy of the State that these rivers shall be preserved for the benefit and enjoyment of the present and future generations." This language can be heard today in RSA 483, the legislation that established the RMPP.



# Frequently Asked Questions Regarding Stormwater Sampling

Adapted from “Advanced Monitoring Techniques: Stream Surveys & Stormwater Sampling” by Andrea LaMoreaux, Volunteer Lake Assessment Program, 2002

## What is stormwater runoff?

Stormwater runoff is the result of precipitation that runs-off, or flows overland, rather than infiltrating into the ground. The ability of precipitation to infiltrate into the ground is determined mostly by the type of surface that it falls upon. An impervious surface is a surface which does not allow precipitation to infiltrate. Examples of impervious surfaces include streets, parking-lots, driveways, buildings, or any other surface which causes water to run over it, rather than infiltrate through it. Stormwater runoff washes over these surfaces picking up pollutants as it travels. These pollutants may include soil particles from eroding streambanks or other exposed/disturbed soils within the watershed, fertilizers from lawns, petroleum products from roadway and driveway surfaces, residues from industrial activities, litter, and wildlife feces or pet waste. Stormwater runoff often carries these pollutants into surface waters such as rivers and lakes, which can adversely impact their water quality. Pollutants transported in stormwater runoff are classified as non-point source pollution. Non-point source pollution refers to pollutants discharged over a wide land area and do not originate from one easily identifiable source. Non-point source pollution is the leading cause of reduced water quality in U.S. waterbodies.

## During what time of year should you conduct stormwater sampling?

Stormwater sampling should be conducted in the time period between the last freeze in the spring and the first frost in the fall. During this time of year, vegetative cover is present within the watershed, which slows the flow of stormwater runoff over the land and also uptakes some of the pollutants. If possible, it is best to conduct stormwater sampling in the spring, soon after the snow has melted and the ground is exposed. At this time of year, runoff and erosion problems will most likely be evident.

## How long should it rain before you sample?

It is best to conduct stormwater sampling so that the “first flush” is collected.

Usually, the stormwater that initially runs off an area will be more polluted than the stormwater that runs off later, after the rainfall has “cleansed” the drainage area. The stormwater containing this high initial pollutant load is called the “first flush”.

## Does the first flush always happen?

No. The first flush phenomenon may not occur with every storm event. The (EPA) has conducted intensive stormwater runoff monitoring studies that have shown that the first flush phenomenon may not occur in larger drainage areas. While the concept of first flush is straightforward, it may not be observed during every storm event for one or more of the following reasons.

- The drainage characteristics of the area may prevent it. In large watersheds, the initial runoff from the most distant parts of the watershed may not reach the drainage area outlet for some time after a storm starts. This time lag is rarely an issue for smaller watersheds.

- Some pollution discharges are not directly related to stormwater runoff. For large storms, continuous discharges from sewer overflows may obscure any first flush associated with stormwater runoff. (EPA, “Stormwater First Flush Pollution” [www.epa.nsw.gov.au/mao/stormwater.htm](http://www.epa.nsw.gov.au/mao/stormwater.htm))

As a good rule of thumb, stormwater sampling should be conducted **after one-half inch of rain has fallen within a Six hour period after at least three days of dry weather. It is best if the samples are taken at least two hours after one-half inch of rain has fallen.** Following these guidelines will give your monitoring group a good chance of capturing the first flush.

## How do you know how much it rained?

You can usually find a rain gauge at a hardware store or other stores that supply gardening or landscaping materials, or, you can also make one.

## What should you look for prior to selecting your sampling stations?



Prior to selecting which stations will be sampled during a storm event, your group should examine the land uses in the immediate vicinity of existing sampling stations. The table below

lists typical watershed land uses and associated water quality issues that can contribute to elevated levels of pollution.

<b>Land Use</b> <i>(water quality issue of concern)</i>	<b>Elevated Conductivity</b>	<b>Elevated Turbidity</b>	<b>Elevated Total Phosphorus</b>	<b>Elevated <i>E.coli</i></b>
<b>Construction Area</b> <i>(disturbed/exposed soils)</i>	X	X	X	
<b>Agricultural Area</b> <i>(animal wastes)</i>			X	X
<b>Agricultural Area</b> <i>(erosion, pesticide, and fertilizer use)</i>	X	X	X	
<b>Residential/Commercial Area</b> <i>(potentially failed septic system)</i>	X		X	X
<b>Residential/Commercial Area</b> <i>(runoff from impervious areas)</i>	X	X	X	X
<b>Residential/Commercial Area</b> <i>(Lawns with excessive fertilizer use)</i>	X		X	
<b>Road Crossing</b> <i>(paved – road salt applied in winter)</i>	X			
<b>Road Crossing</b> <i>(eroded shoulder)</i>	X	X	X	
<b>Wildlife/Animals</b> <i>(feces from duck, beaver, geese, pets)</i>		X	X	X

### What parameters should you sample for?

Prior to conducting the storm event sampling, you should talk to VRAP staff to determine exactly what parameters your group will be sampling for. Typically, turbidity, conductivity, total phosphorus, and *E.coli* are the major parameters of concern for stormwater sampling.

### Sampling Logistics

Remember, when conducting rain event sampling, **sampling should be conducted after one-half inch of rain has fallen within a six hour period after at least three days of dry weather.** If your monitoring group decides to sample multiple stations during one storm event, you will need a couple of teams. This minimizes the possibility that the first flush event is captured at one station, but missed at another station, since it took a while for monitors to travel to other sampling stations.

### What is the “stream bracketing” technique?

Using the stream bracketing technique, samples are collected in multiple locations along each station to help pin-point any possible pollution sources. Samples should be taken upstream and

downstream of each potential pollution source at existing sampling stations.

### What happens next?

VRAP staff will review the results of the stormwater sampling event with your group. If the data are not conclusive, it may be necessary to conduct additional stormwater sampling to better pinpoint the sources of pollution.

Once the sources of the elevated levels of the pollutants of concern have been identified, NHDES may recommend that best management practices (BMPs), or other corrective actions, be implemented within the watershed to minimize, or possibly even eliminate, the sources of pollution. Recommended BMPs may include land use management activities in a given area.

Stormwater sampling is a useful tool that provides NHDES and volunteer monitors with the ability to trace potential water quality problems to their source before a severe negative impact can be made on the water quality. Water quality pollution prevention through routine VRAP monitoring and stormwater sampling ultimately saves the community and the state the cost of expensive, after-the-fact remediation.

## Mark Your Calendars: Watershed Conference 2008

This annual event sponsored by NHDES, NH LAKES and the New Hampshire Rivers Council will be held on Saturday, November 15 from 7 a.m. to 4 p.m. at the Grappone Conference Center in Concord.

This conference brings watershed stakeholders together to address environmental topics related to rivers, lakes, ponds and their watershed throughout the state. It allows individuals to join peers from local river management advisory committees, volunteer monitoring groups, lake associations, watershed associations, municipalities, conservation commissions, and non-profits; to attend informational workshops; exchange river and watershed initiative ideas; view displays from river and lake organizations; and come away with renewed enthusiasm and a world of knowledge to put toward protecting the aquatic resources.

Back by popular demand, Jen Drociak will be conducting a two-hour workshop, entitled ***"A Virtual Field Guide to Common Aquatic & Riparian Plants of New Hampshire,"*** based on the NHDES field guide with the same title.



Embark on a virtual tour of New Hampshire's common aquatic and riparian plants, including submerged plants, floating plants, emergent plants, ferns, woody shrubs, climbing vines, and trees. This workshop will provide brief, simple, and easy tips in identifying the most frequently encountered common aquatic and riparian plants, shrubs, and trees of New Hampshire.

For more information, please visit [www.des.nh.gov/WMB/WatershedConference/](http://www.des.nh.gov/WMB/WatershedConference/), or contact Laura Weit at (603) 271-8811 or [laura.weit@des.nh.gov](mailto:laura.weit@des.nh.gov).

---

## Have You Scheduled An Annual Field Visit Yet?

VRAP staff aim to visit each group annually during a scheduled sampling event to verify that volunteers successfully follow the VRAP protocols. If necessary, volunteers are re-trained during the visit, and the group is notified of the result of the verification visit.

During the field sampling procedures assessment, VRAP staff offer important reminders and suggestions to ensure proper sampling techniques and re-train volunteers in the areas needing improvement. Afterwards, the volunteers are sent a follow-up e-mail providing written reminders and suggestions of the methods that need improvement. It is important to ensure that all volunteers attend an annual VRAP training workshop prior to

the sampling season and to familiarize themselves with proper sampling techniques, written protocols, and the use of water quality meters. Please remember to schedule an annual volunteer field sampling procedures assessment in 2008 by contacting the VRAP Coordinator at (603) 271-0699.



# 2008 VRAP Sampling Reminders

## Calibration

- **Calibrate the turbidity meter** to a known standard (typically 1.0 NTU) at the **beginning of the day**.
- Remember to **calibrate the dissolved oxygen and pH meters before every measurement**, except for the QA/QC Meter Checks.
- Remember that the **“Dissolved Oxygen Calibration Value”** is a known value based on the altitude that the meter is calibrated to, and is the smaller number to the right of **CAL** on the bottom of the LCD screen. Similarly, the **“Dissolved Oxygen % Saturation Chamber Reading”** is the actual value of the probe in the chamber once the meter has been calibrated, after the screen reads “Save”. This is the larger number on top of the LCD screen.

## Replicate Sample

- Be sure to take a **“Replicate”** sample (same bucket/sample) once a day within 15 minutes of collecting and measuring the original sample.

## Meter Checks

- Complete the **“Initial Meter Checks”** by checking the conductivity meter with a known standard (typically 200 uS) and the turbidity meter with a known standard (typically 1 NTU).



*Cain's Brook VRAP Group*



*Blackwater River VRAP Group*

- Remember to perform the **“QA/QC Meter Checks”** by measuring the 6.0 pH buffer, DI turbidity blank, and zero oxygen once a day!
  - Complete the **“End of the Day Meter Checks”** by checking the conductivity meter with a known standard (typically 200 uS) and the turbidity meter with a known standard (typically 1.0 NTU).
- ## Completing the Field Data Sheet
- Please remember to include your first and last names on the field data sheet as we make every attempt to include all volunteer's full names in your annual report at the end of the year.
  - Data should be recorded neatly, legibly, and thoroughly so that there is not any missing, incomplete, or incorrect information.
  - Ensure that all sections of the VRAP field data sheet are completed before moving on to the next station, and before submitting to VRAP staff.



# Thank-You to all 2007 VRAP Volunteers!

- **Ammonoosuc River Local Advisory Committee:** Jan Edick, Mary Edick, Christopher Jensen, Marilyn Johnson, Ray Lobdell, Margaret Long, Richard Walling
- **Ashuelot River Local Advisory Committee:** Paul Daniello, Pat Eggleston, Penny Eggleston, Jim Holley, Brad Hutchinson, Bob Lamoy, Carolyn MacDonald, Malcom MacDonald, Bill Patnode, Mike Morrison, Barbara Richter, Barbara Skuly, Steve Stepanuck, Ann Sweet, Roger Sweet, Signid Scholz-Karabakakis, Bob Thompson
- **Baker River Watershed Association:** Larry Cushman, Dick Flanders, Lyle Moody, Ellie Murray
- **Bellamy River Watershed Association:** Marci Erickson, Ric Erickson, Eric Fiegenbaum, Katie Fiegenbaum, Craig Seaver
- **Blackwater River VRAP Group:** Arlene Allen, Peg Boyles, Bob Bradbury, Colleen Bradbury, Vickie Branch, Laura Deming, Joe Landry, Nancy Mailloux, Judy Preston, Cindy Romano, Leslie Williams
- **Cains Brook VRAP Group:** Sue Foote, Natalie Landry, Duncan Mellor
- **Cocheco River Watershed Association:** Mike Ashcroft, Ginny Bannon, Norma Bard, Lorie Chase, Barbara Dionne, Melodie Esterberg, David Green, Kristen Henderson, Dan Hubbard, Lauren Jacoby, Larry Larkin, Bill Sammis, Cal Schroeder, Mike Suprin, Pam Watts, Andy Zevetchin
- **Cold River Local Advisory Committee:** Carol Drummond, Mike Heidorn, Allen Heidorn, Deb Hinman, Jen Polcari
- **Contoocook North Branch Rivers Local Advisory Committee:** Marion Baker, Amy Biddle, Bob Carney, Shirley Carney, Ken Cloutier, Beth Alpaugh-Cote, Melissa King, Louise Malcom, Kelsey Nyland, Cory Stephenson, Laura Weit, John Wilson
- **Dalton Conservation Commission:** Nancy Comeau, Ed Craxton, Mike Crosby, Helen Delage, Ed Tomashek
- **Exeter Conservation Commission:** Don Clement, Helen Henson, John Henson, Pete Richardson
- **Sharon Conservation Commission:** Selinda Chiquoine, Karen Debonis
- **Gunnison Brook VRAP Group:** Elaine Bevilaqua, Bea Jillette, Sandy Sonicchsen, Jeff Volkers
- **Meredith Conservation Commission:** Don MacFarlane, Ralph Pisapia
- **Hodgson Brook Advisory Committee:** Nick Ciani, Candace Dolan, Kate Dolan, Angela Hiley, Ginny Raub, David Sanderson, Victoria Sargent, Ann Smith
- **Hooksett Conservation Commission:** Steve Couture, Riley Harris
- **Isinglass River Local Advisory Committee:** Clayton Carl, Lorie Chase, Kevin Constantine, Maryalice Fischer, Jessica Fischer, John Johnstone, Ed Kelly, Bruce Kirmse, Peter Keefe, Anne Melvin, Jim McGranaghan, Jasmine Schonwald, Neil Schonwald, Howard Skazka, Bruce Smith
- **Israel River VRAP Group:** Bob Ball, Beth Ball, Bill Fischang, Peg Fischang, Marge Goodson, Jim Irish, Jean Leone, Joe Marshall, Cindy Martindill, Chuck Martindill, Charles Muller, Winnie Ward
- **Lamprey River Watershed Association:** Celia Adams, Charlene Anderson, Aleta Bilodeau, Sandy Cody, Bob Cote, John Crandall, Rhonda Crandall, George DeWolf, Catherine Gardener, Jim Gardener, Ben Genes, Dawn Genes, Sonja Gonzalez, Barbara Haglind, Barry Hane, Mike Kappler, Deb Kimball, Betsy Kruse, Terry Lipp, Tim Lindsey, Joe Miele, Sue Mooney, Larry O'Connell, Cheryl Smith, Marianne Smith, Deb Stevens, Janna Stoopas, Peter Stoopas, Susan Wilderman
- **Oyster River Watershed Association:** Holly Bagley, Ethan Brooke, Barbara Flynn, Brian Gallagher, Ben Getchell, Jim Hornbeck, Megan Laird, Tom Lee, Barbara Maurer, Doug Miller, Paul Pepler, Gloria Quigley, Stephanie Saporito, April Simnor, Carl Starr, Liz Willey
- **Pemigewasset River Local Advisory Committee:** Dave Anderson, Fred Gunter, Louise Gunter, Dan Paradis, Helga Stamp, Max Stamp
- **Piscataquog River Watershed Association:** Clint Davis, Amy Doherty, Brian Dresser, Jerry King, Addie Ann Lambarth, John Magee, Tom Noel, Karen Roy, Agnes Shellmer
- **Powwow River VRAP Group:** Dale Bogaski, Cornelia Courtney, Adele Fiorillo, Steve Kaneb
- **Saco River VRAP Group:** Arthur Heigl, Daryl Mazzaglia, Nancy Oleson
- **Somersworth 4-H Club:** Ben Littlefield, Gail Littlefield, Katie Littlefield
- **Sucker Brook VRAP Group:** Mark Henderson, Bob Morin, Brian Sullivan
- **Warner River VRAP Group:** Erin Meegan, Jean Meegan, Sawyer Meegan, Laura Milliken, Caleb Seymour, Nathaniel Seymour